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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/171,399	10/16/1998	MASAHIRO SANO	KINOSHITACAS	7987

7590 12/15/2004

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EXAMINER

EINSMANN, MARGARET V

ART UNIT	PAPER NUMBER
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1751

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/171,399

Applicant(s)

SANO ET AL.

Examiner

Margaret Einsmann

Art Unit

1751

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 9/29/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 12 and 19-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 12 and 19-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/29/04 has been entered. Accordingly, claims 12, 20-27 are pending.

The following rejections are maintained as applied in the office action of 5/21/01, paper # 16, and applied to the newly added claims. Applicant's arguments filed 1/20/02 were not persuasive for the reasons explained in the advisory action of 2/22/02, paper # 20. No new arguments or data has been presented in any following response.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

Art Unit: 1751

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12, 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shepler et al, US 3,651,210. Surface treatment chemicals, or chemicals that form a coating composition are taught that comprise a reactive synthetic emulsion and a protein, See abstract. Soluble proteins are used, which are selected from vegetable proteins including soya flour, animal proteins such as fish protein and casein. See col 4 lines 48-50. The reactive modifiers are ethlenically unsaturated compounds as listed in col 4 lines 9 et seq. The polymerization catalysts are listed in col 5 lines 40 et seq and include ammonium persulfate, azo-bisisobutyronitrile and cumene peroxide. Noting example 1, the polymerization was carried out with potassium persulfate, which is a peroxide generating compound, as the polymerization initiator. Thus example 1 contains all of the components of instant claims; water soluble protein, reactive modifier and polymerization initiator. The modifiers listed in col 4 contain vinyl groups, amine groups and carboxylic groups. The reference does not specifically disclose fibroin, collagen or wool as the protein. However, one skilled in the art would be aware that those are species of the vegetable and animal proteins disclosed in the col 4 lines 48-50. The reference does not give a molecular weight range of the protein. It would have been obvious to the man having skill in the art that this reaction could be used with soluble proteins within the weight range as claimed as it is taught as being useful with all soluble vegetable and animal proteins.

Claims 12, 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denzinger et al., WO95/31576. The US equivalent, 5,714,560, will be cited in the narrative that follows. Chemicals for tanning, that is surface treating chemicals, are formed of a polymerization product of protein and ethlenically unsaturated monomers in the presence of a polymerization initiator. See abstract. Proteins are selected from the group in col 4 lines 28 et seq. Included in the list are wool, collagen and fibrinogen (which forms fibroin) as in instant claim 15. They are converted to soluble form by hydrolysis, acid, enzymes etc. Col 4 lines 50 et seq. This implies that they include, or are exclusively, low molecular weight proteins. The list of polymerization initiators beginning in col 5 line 61 includes peroxides, metal salts and azo compounds. The only limit of the instant claims missing is the claimed molecular weight. It would have been obvious to the man having ordinary skill in the art at the time the invention was made that this disclosure includes low molecular weight proteins as claimed because of the statement in col 4 lines 50 that the proteins are converted to soluble form, and the methods listed result in molecular weight reduction.

Claims 12, 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kroner et al., US 5,260,396. Graft polymers of a water soluble protein, including collagen, wool and fibrinogen which have been formed into soluble form by methods including acid hydrolysis or enzyme treatment are reacted with ethlenically unsaturated monomers in the presence of polymerization initiators which are peroxide compounds, azo compounds or heavy metal salts. see cols 3 and 4. The reference differs from the instant claims because it does not give a molecular weight range of the starting protein

Art Unit: 1751

in the composition and process. It would have been obvious to the skilled artisan that this reference uses low molecular weight polymers since the statement in col 3 lines that the proteins are digested, hydrolyzed etc to form soluble proteins inherently results in molecular weight reduction.

The following is a copy of response to applicant's arguments as stated in the advisory action of 2/22/02, paper #20:

The arguments are not persuasive and the claims remain rejected for the following reasons. Applicant argues that none of the cited references discloses a molecular weight within the range claimed, and that applicant has shown criticality in use of the specific molecular weight range because a superior moisture absorbency can be imparted to a synthetic fiber with the hydrophilic layer being very durable and having a soft feel on the fiber. Applicant states that the evidence of record, inventive example 7 versus comparison 19 on page 29, shows that by keeping the molecular weight within the stated range, superior properties are obtained. The comparison cited is not commensurate in scope with the claimed subject matter, nor does it compare the closest prior art. There is only one example of a protein being used, and that protein is a silk protein. The claims are not limited to silk protein containing polymers. In fact silk proteins per se are not claimed at all in independent claim 12. The evidence as presented cannot be extrapolated to define a trend when the claims are so broad as to contain polymers from many different kinds of protein, protein derivatives and polysaccharides. Additionally, applicant is arguing limitations that are not in the claims.

Art Unit: 1751

The polymers in the references are "surface treatment chemicals." All of the references teach surface treatment chemicals, all form polymerization products, all contain the reaction product as claimed. Applicant next states that none of the references discloses the molecular weight as claimed. It is well within the skill of the polymer chemist to control the molecular weight of a polymer, and applicant claims a broad molecular weight range. Additionally, Kroner et al disclose K values (molecular weight in thousands) of 23.2 K and 20.8K, just outside of the upper limit as claimed.

The following are new grounds of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 20 is dependent on canceled claim 19. Accordingly it cannot be further treated on its merits.

Claim 26 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 26 is broader in scope than claim 12, since it claims any compound having an aziridine (ethylenimine,

Art Unit: 1751

azacyclopropane) group while claim 12 recites the particular aziridine compound as claimed in claim 27. The examiner suggests canceling claim 26 and making claim 27 dependent on claim 12.

Claim 12 is objected to because of the following informalities: di-acrylate on lines 10 and 12 should be diacrylate. Appropriate correction is required.

Claims 12,21,23,26 and 27 are rejected under 35 U.S.C. 103(a) as being obvious over Murakami et al., JP 07300770.

The Japanese patent and abstracts from Japio database and STN database are included with this action. Referring to the STN abstract, a polyester crepe was impregnated with a solution containing a polyethylene diacrylate , an aziridine compound, atelocollagen and chitosan and heat treated to give a surface treated polyester fabric. The reference does not give a molecular weight range of the protein. It would have been obvious to the man having skill in the art that this combination of treatment chemicals is equivalent to the claimed chemicals because it is used for the same purpose as applicant's claimed treatment chemicals, that it is used to confer water absorption properties on the polyester.

Claims 12,22, 26 and 27 are rejected under 35 U.S.C. 103(a) as being obvious over Otoi et al., JP 6-158545. To readily obtain silk fibroin grafted polymer-processes fabric having a silk luster, handle, washing resistance, repulsion and water absorption by coating a film comprising a specific amount of silk fibroin-graft polymer on the surface of a fiber, patentee grafts silk fibroin blended with a compound containing an aziridine

Art Unit: 1751

group or a polyfunctional compound containing two or more aziridine groups to form a treating solution. See Japio abstract under Purpose and Constitution. On page 5 of the patent itself, compound 9 is applicant's reactive modifier containing an aziridine group. The reference does not give a molecular weight range of the silk fibroin. It would have been obvious to the man having skill in the art that this combination of treatment chemicals is equivalent to the claimed chemicals because it is used for the same purpose as applicant's claimed treatment chemicals, that it is to improve the surface properties on natural or synthetic fibers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Margaret Einsmann whose telephone number is 571-272-1314. The examiner can normally be reached on 7:00 AM -4:30 PM M-W and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1751

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Margaret Einsmann
Primary Examiner
Art Unit 1751

12/9/04